Issue
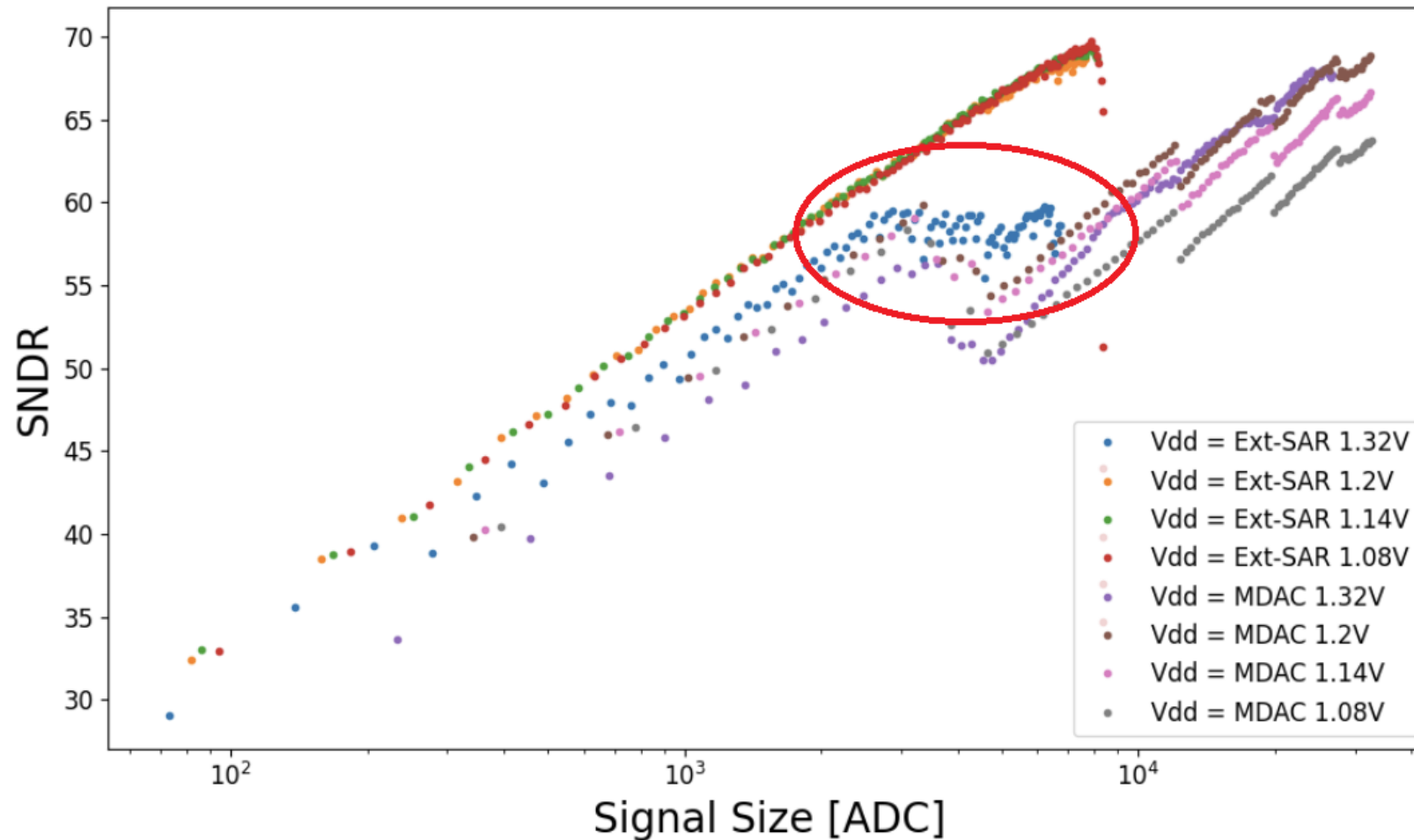
Performance Degradation with VDD = 1.32V

Observation

Calib circuit constants derived when Vdd = 1.32V (peak performance ~10ENOB)

3519.17, 2010.78, 1006.82, 629.69, 377.97, 252.36, 125.78,
218.76, 125.42, 62.61, 31.76, 23.69, 15.89, 10.0, 6.0, 4.0, 2.0, 1.0, 0.5, 0.25

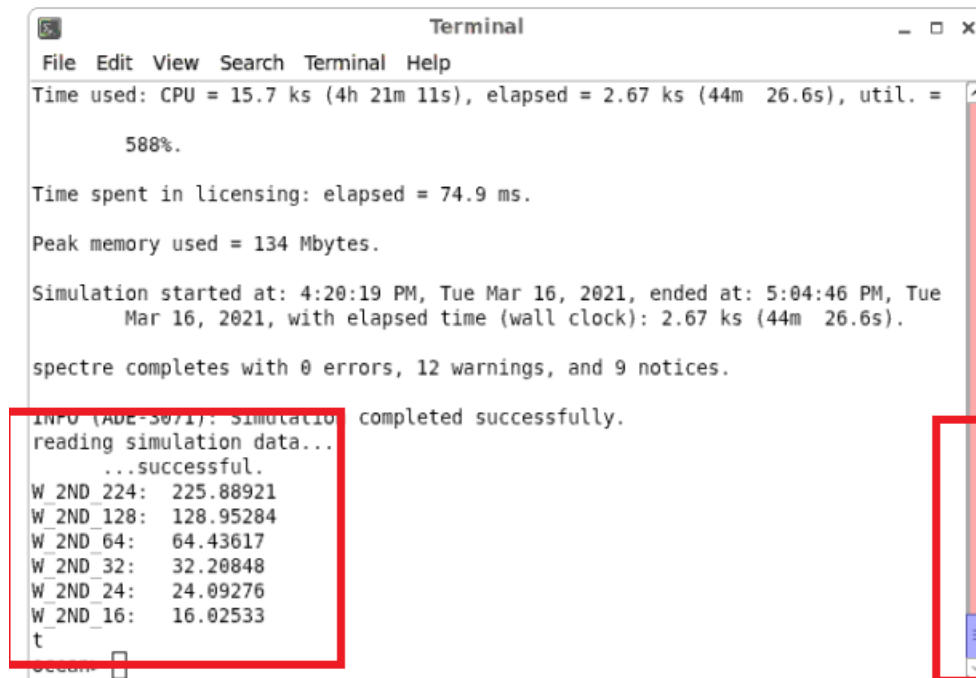FMIN, fit all SAR weights (peak performance ~11ENOB)

3519.17, 2010.53, 1006.92, 629.8, 378.0, 252.35, 125.78,
231.6, 135.51, 65.07, 32.86, 24.5, 16.19, 10.13, 6.07, 4.05, 2.02, 1.06, 0.57, 0.32

**Discrepancy of 2nd stage MSB weight
Hardware derived VS FMINSEARCH**

Simulation

Comparison of hardware derived weights with VDD=1.2V vs VDD = 1.32V (no RC extraction)

VDD=1.2V

VDD = 1.32V


```
Time used: CPU = 15.7 ks (4h 21m 11s), elapsed = 2.67 ks (44m  26.6s), util. =
        588%.

Time spent in licensing: elapsed = 74.9 ms.

Peak memory used = 134 Mbytes.

Simulation started at: 4:20:19 PM, Tue Mar 16, 2021, ended at: 5:04:46 PM, Tue
        Mar 16, 2021, with elapsed time (wall clock): 2.67 ks (44m  26.6s).

spectre completes with 0 errors, 12 warnings, and 9 notices.

INFO (ADE-3071): Simulatio  completed successfully.
reading simulation data...
        ...successful.
W_2ND_224:   225.88921
W_2ND_128:   128.95284
W_2ND_64:    64.43617
W_2ND_32:    32.20848
W_2ND_24:    24.09276
W_2ND_16:    16.02533
t
```
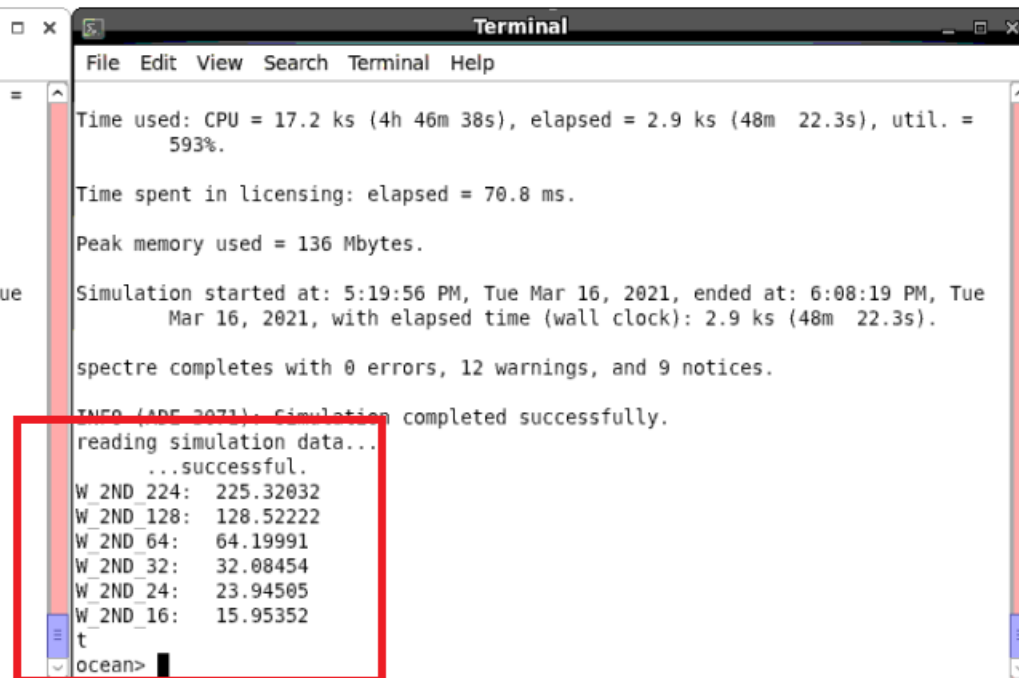
```
Time used: CPU = 17.2 ks (4h 46m 38s), elapsed = 2.9 ks (48m  22.3s), util. =
        593%.

Time spent in licensing: elapsed = 70.8 ms.

Peak memory used = 136 Mbytes.

Simulation started at: 5:19:56 PM, Tue Mar 16, 2021, ended at: 6:08:19 PM, Tue
        Mar 16, 2021, with elapsed time (wall clock): 2.9 ks (48m  22.3s).

spectre completes with 0 errors, 12 warnings, and 9 notices.

INFO (ADE-3071): Simulation completed successfully.
reading simulation data...
        ...successful.
W_2ND_224:   225.32032
W_2ND_128:   128.52222
W_2ND_64:    64.19991
W_2ND_32:    32.08454
W_2ND_24:    23.94505
W_2ND_16:    15.95352
t
ocean>
```

Weights are close

Simulation

Simulation with RC extraction is in process